

# ATLAS, US-ATLAS DEI and Outreach

Sarah Demers, Yale University

February 23, 2022



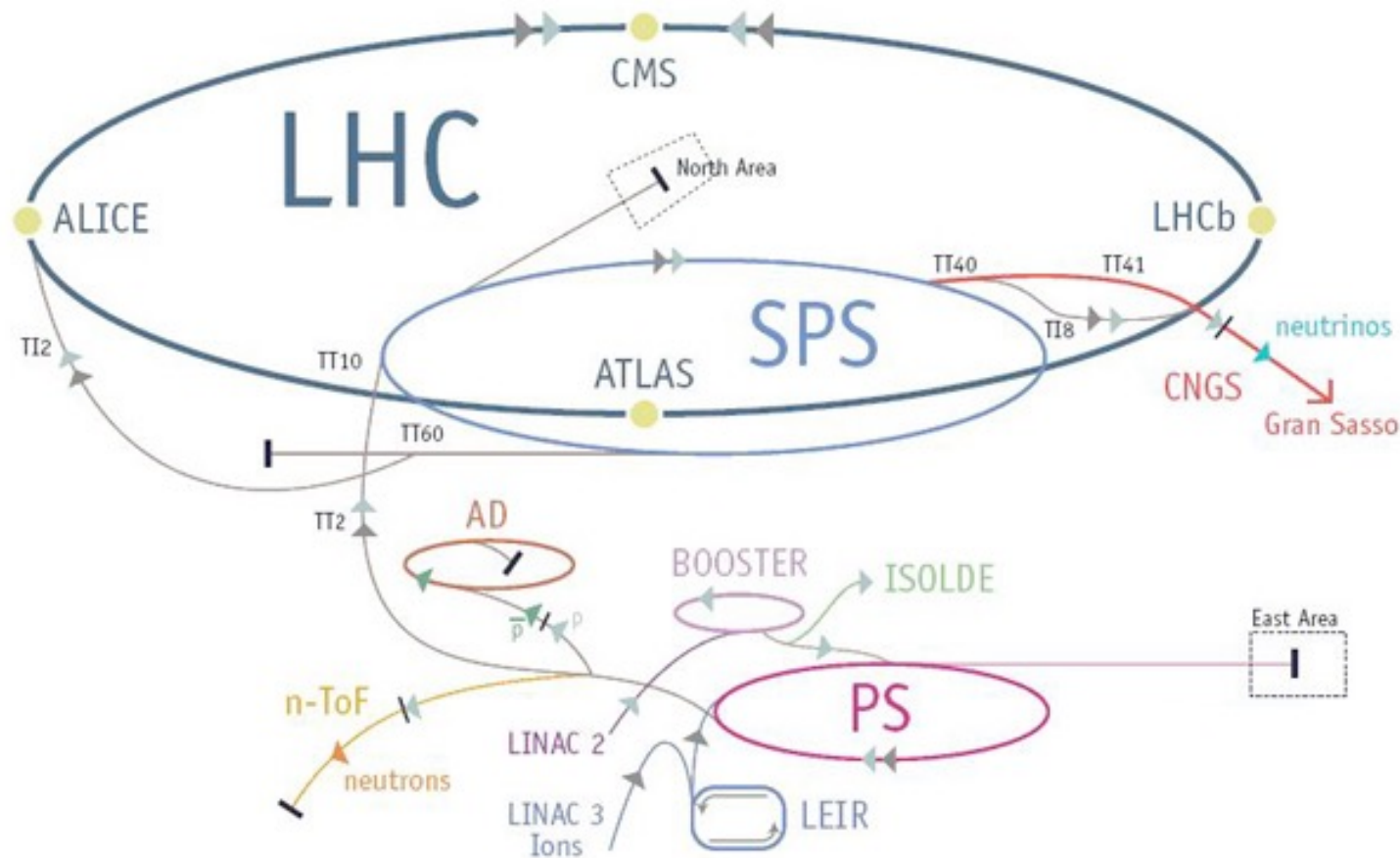
# The Large Hadron Collider

An aerial photograph of a rural landscape with green fields and small villages. A large, semi-transparent red circle is drawn over the landscape, representing the circular path of the Large Hadron Collider. In the bottom right corner, a detailed 3D rendering of the LHC tunnel is shown, extending from the foreground into the distance, following the curve of the red circle. The tunnel is a large, cylindrical structure with various components and pipes visible on its exterior.



# CERN Accelerator Complex

*(the world's largest refrigerator, and highest energy collider)*



LHC: Last step in a series of accelerators

Protons end up traveling close to the speed of light before we **SMASH** them into each other...

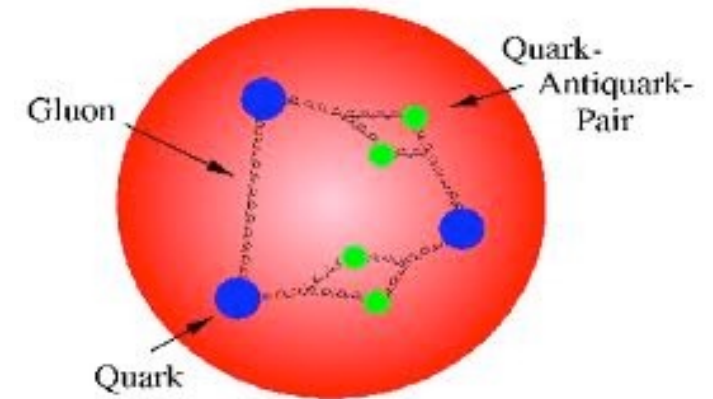
# Why High Energy?



We are trying to study very MASSIVE particles  
We need enough energy to create them

$$E = mc^2$$

It takes a lot of energy to break up the proton  
to study the constituents (quarks)



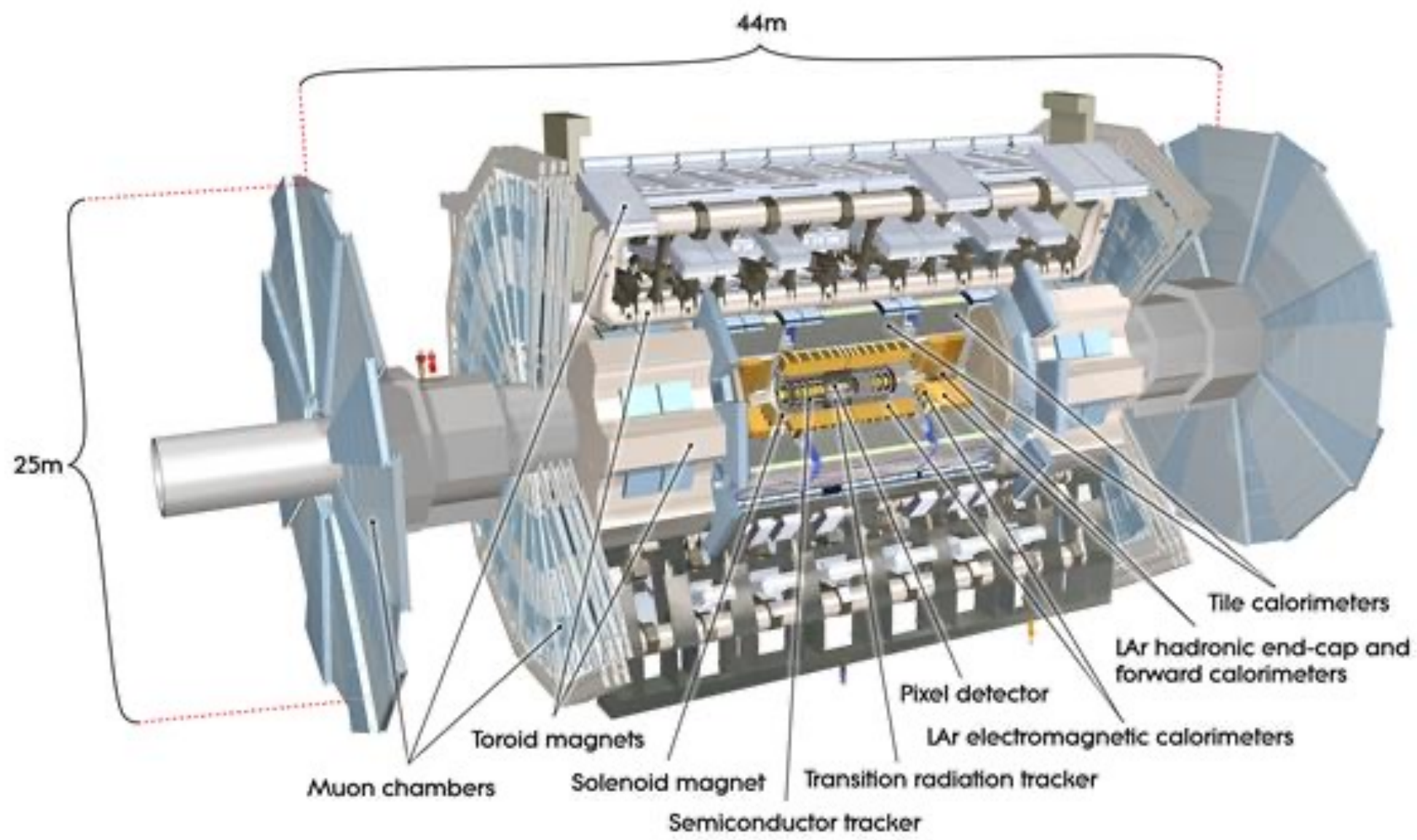
The higher the energy, the more phase space we can explore



# How big is 27 km in circumference?



LHC circumference



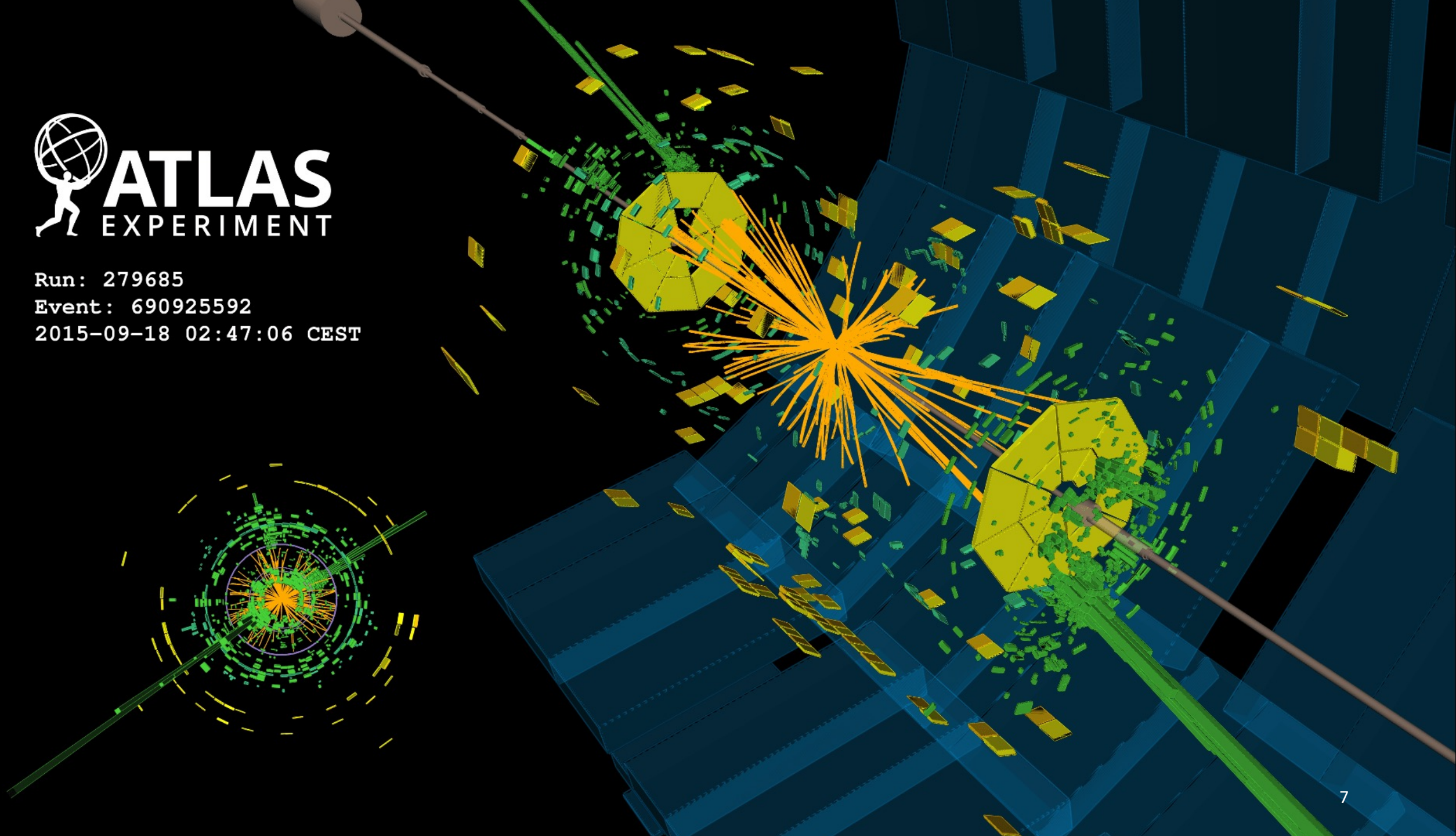




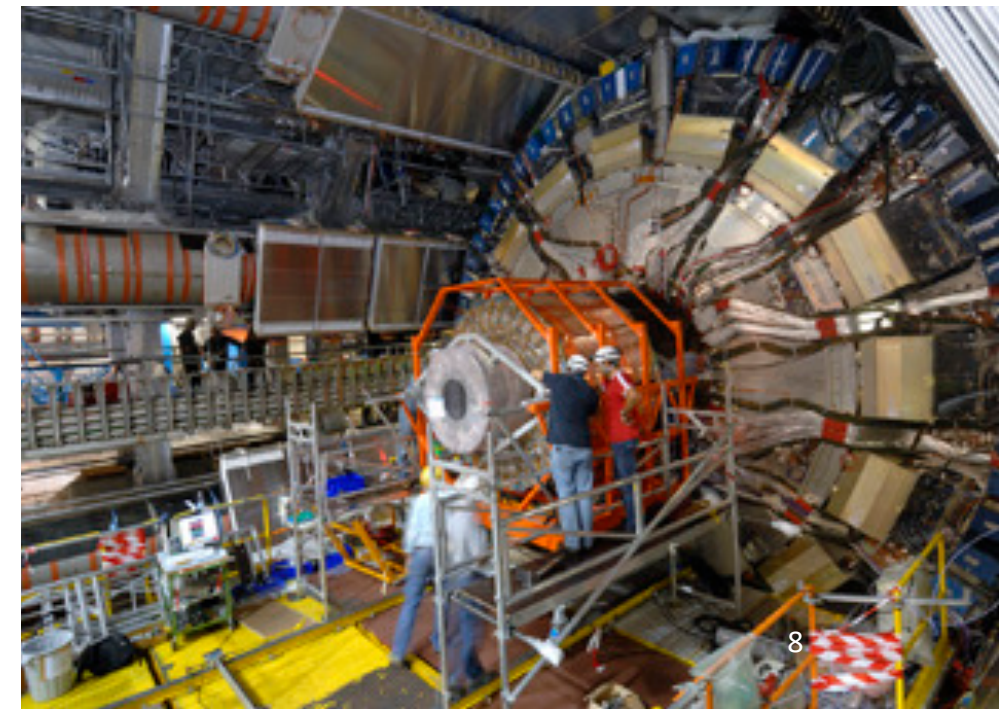
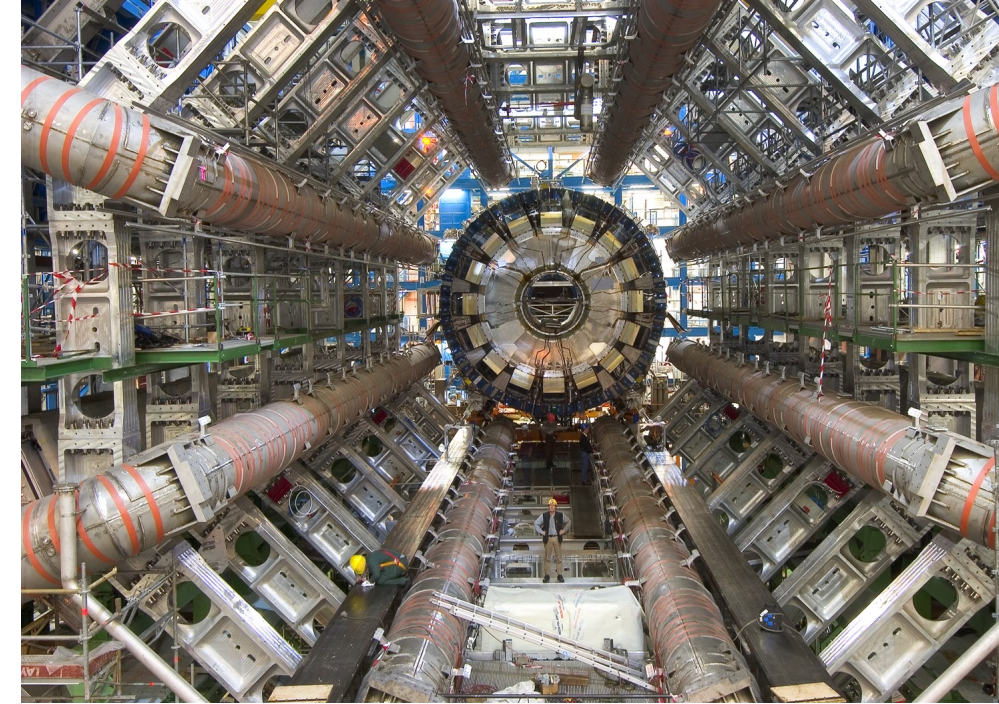
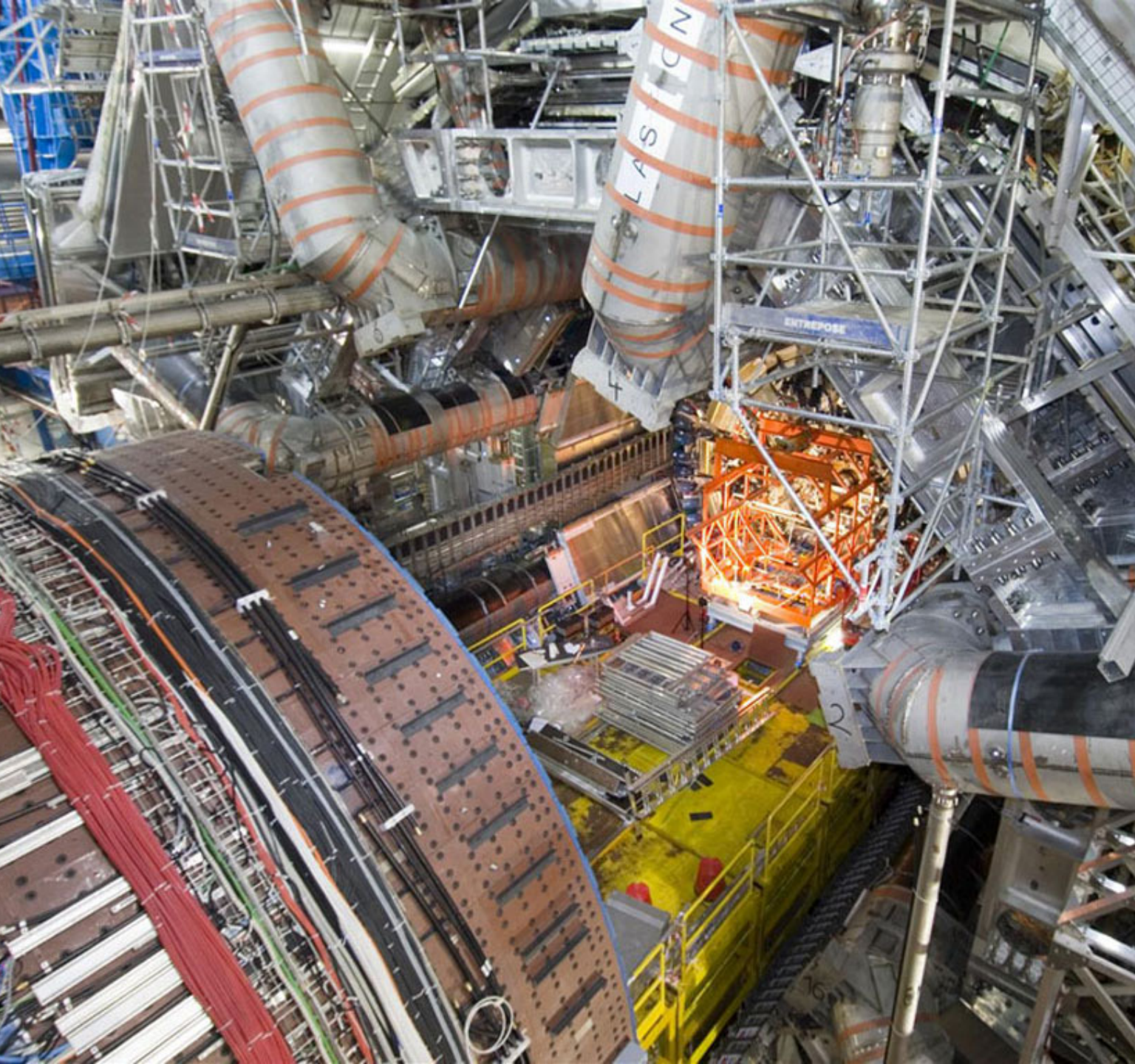
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## COLLECTING RAW DATA

ATLAS records over **10,000 TB of data per year** – that's equivalent to 320,000 hours of 4K streaming. The data are distributed to **over 130 computing centres worldwide** – located on every inhabited continent – and filtered according to the needs of individual physics analyses. As part of these analyses, ATLAS processes 25,000 TB of data every week.





Argentina  
Armenia  
Australia  
Austria  
Azerbaijan  
Belarus  
Brazil  
Canada  
Chile  
China  
Colombia  
Czech Republic  
Denmark  
France  
Georgia  
Germany  
Greece  
Israel  
Italy  
Japan

Morocco  
Netherlands  
Norway  
Poland  
Portugal  
Romania  
Russia  
Serbia  
Slovakia  
Slovenia  
South Africa  
Spain  
Sweden  
Switzerland  
Taiwan  
Turkey  
UK  
USA  
CERN  
JINR

# ATLAS Collaboration

*180 institutions (235 institutes) from 38 countries*





# ATLAS Collaboration member nationalities

*Over 5500 members of 103 nationalities*

[illegible][illegible][illegible][illegible][illegible]

1. *Staphylococcus aureus* 2. *Staphylococcus epidermidis* 3. *Staphylococcus saprophyticus*  
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ATLAS Control Room, November 20, 2009









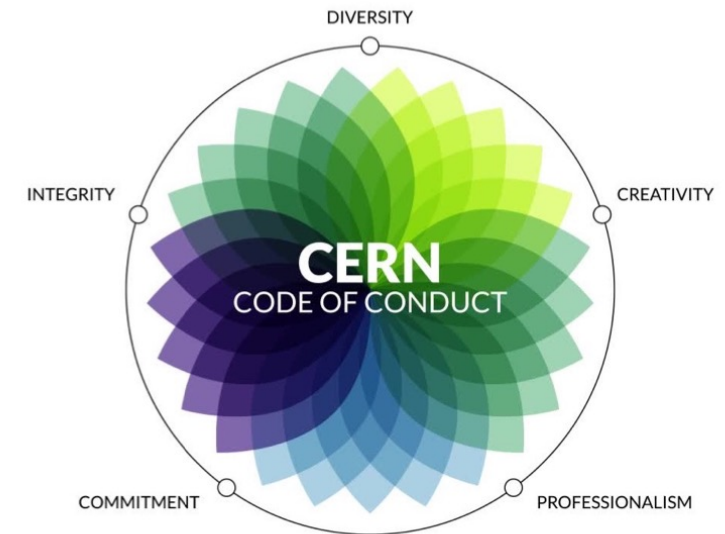
We follow the [CERN code of conduct](#). This means that we abstain from and actively discourage all forms of harassment as well as verbal, non-verbal, written or physical abuse.

- Yelling at someone to make your point is abusive
- Be mindful of the language that you use. For example, sexual language and imagery, sexist, racist, or otherwise exclusionary jokes are not appropriate

Give your colleagues the courtesy and respect that you would like to receive

In meetings we welcome questions, which should be asked and answered respectfully, and pay particular attention to those new to the Collaboration. We want all participants to be able to express their opinions freely

**We kindly ask that all Collaboration members follow these principles**



# Broader Context

November 18, 2021

- ATLAS

- Has a statement on [Diversity and Inclusion](#) that recognizes the existence of discrimination, explicitly supports LGBTQ+ rights, and notes that particular challenges can be faced by women, caretakers, and those with disabilities.
- Has elected contacts for D&I since 2017 and an Early Career Scientist Board that focuses on networking and mental health
- Maintains (and makes public) demographic information
- Has a very strong public engagement program



ATLAS Experiment ✓ @ATLASexperi... · 16m ...

The ATLAS Collaboration at @CERN is committed to improving the visibility and representation of LGBTQ+ people in STEM.

We're proud to support our LGBTQ+ colleagues – on #LGBTSTEMday and every day! 🏳️‍🌈



LGBTQ 🏳️‍🌈 CERN



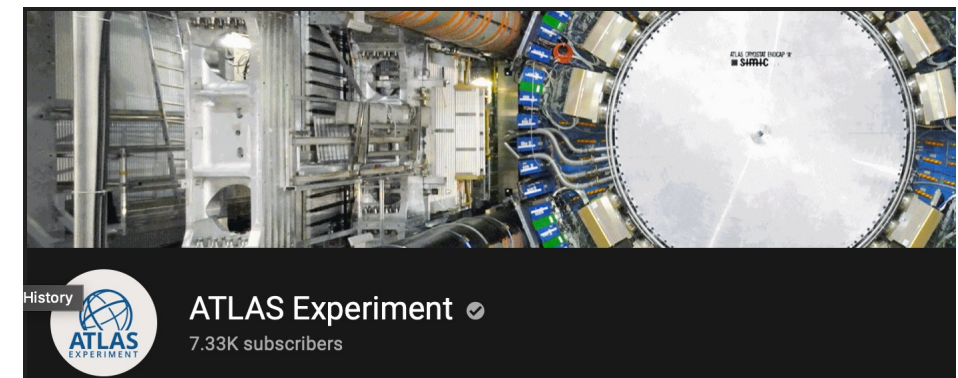
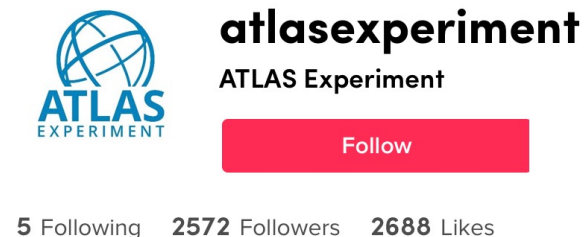
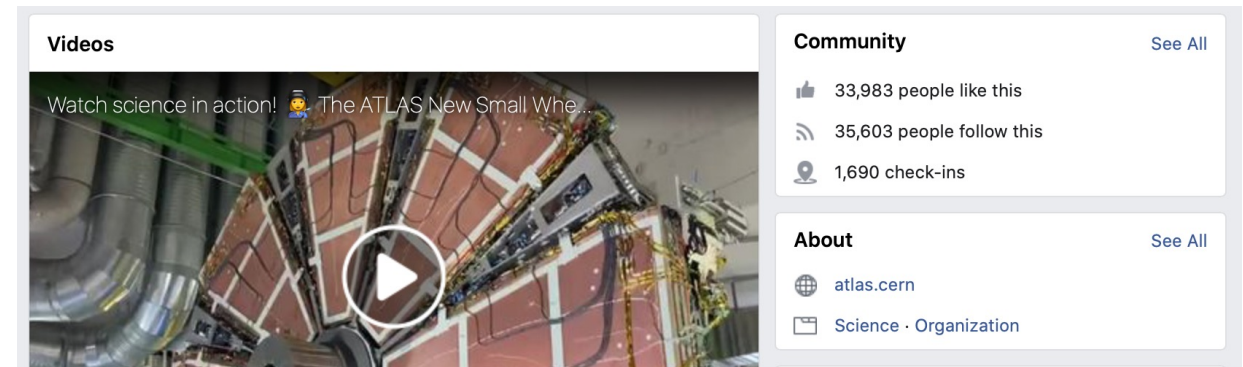
# EPO Broader Context

- ATLAS has an Education and Outreach Group that has collaboration-wide elected conveners and meets weekly
- Highlighting two examples that are in strong support of U.S. ATLAS EPO efforts:
  - ATLAS Virtual Visits
  - ATLAS Social Media
- We additionally have strong links with other LHC experiments
  - Many links through Quarknet and Masterclasses
  - Common assessment framework developed through MREFC
- We have strong links with the ongoing Snowmass efforts
  - Community Engagement Frontier Activities
  - Education and Public Outreach Group Activities

- ↓ [Activities](#)
- ↓ [Augmented Reality](#)
- ↓ [Blogs](#)
- ↓ [Brochures](#)
- ↓ [Calendars](#)
- ↓ [Greeting Cards](#)
- ↓ [Collaboration maps](#)
- ↓ [Colouring Books](#)
- ↓ [Event displays](#)
- ↓ [Fact Sheets](#)
- ↓ [Handouts](#)
- ↓ [Hardware exhibits](#)
- ↓ [LEGO-related activities](#)
- ↓ [Logos](#)
- ↓ [Merchandise](#)
- ↓ [Online Educational Tools](#)
- ↓ [Open Data](#)
- ↓ [Open Days](#)
- ↓ [Physics Cheat Sheets](#)
- ↓ [Pictures](#)
- ↓ [Posters](#)
- ↓ [Press statements](#)
- ↓ [Social media presence](#)
- ↓ [Talks](#)
- ↓ [Training](#)
- ↓ [Updates](#)
- ↓ [Videos](#)
- ↓ [Virtual Reality](#)
- ↓ [Virtual Visits](#)
- ↓ [Visits \(surface & underground\)](#)
- ↓ [Website](#)
- ↓ [Workshops](#)

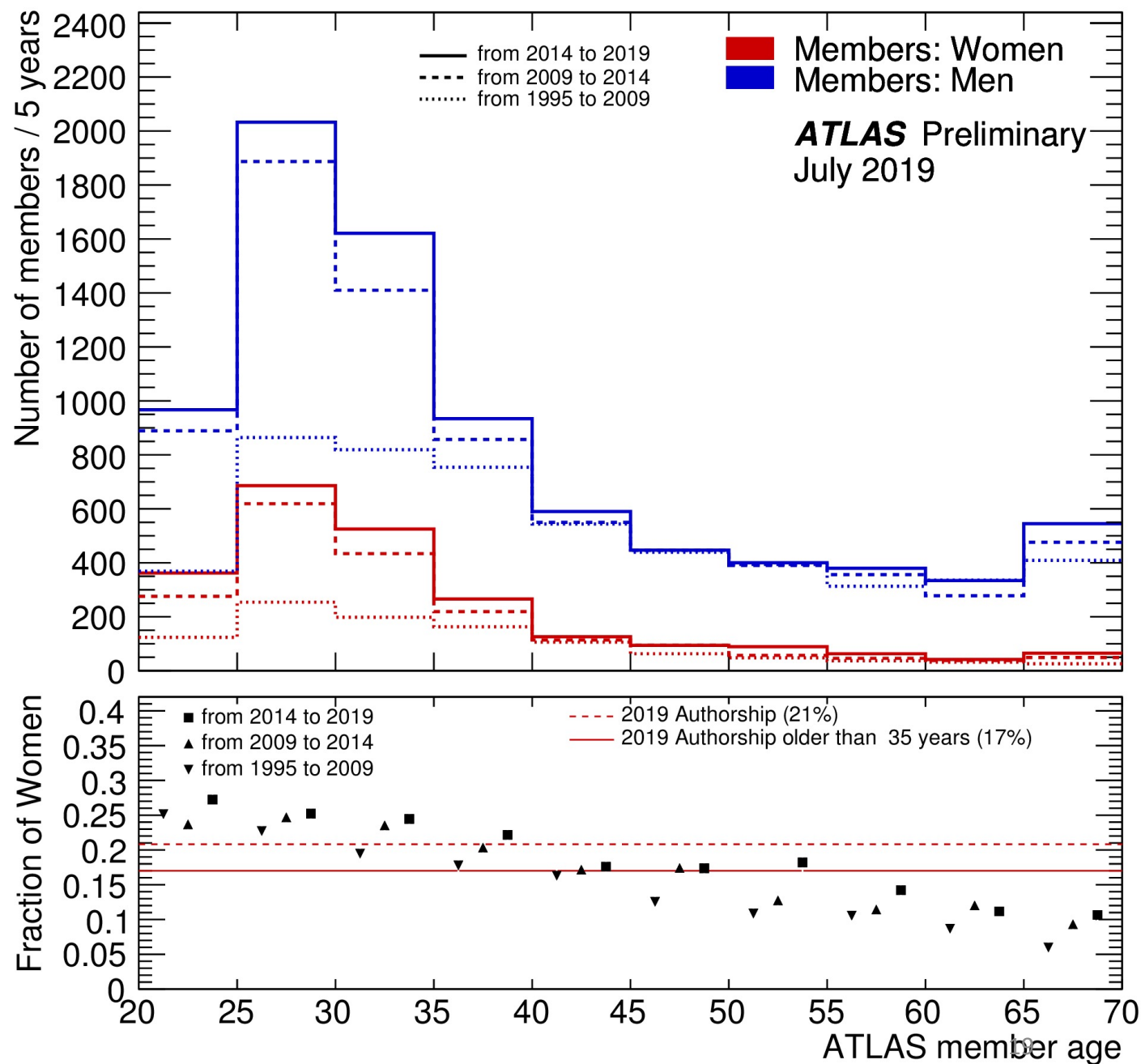
# ATLAS Social Media

- Twitter: 91.6k followers
- Facebook: 35.6k followers
- Instagram: 30.5k followers
- Youtube: 7.3k followers
- Tik Tok: 3.6k followers
- flickr





Who is the ATLAS Collaboration?





# ATLAS Early Career Scientist Board

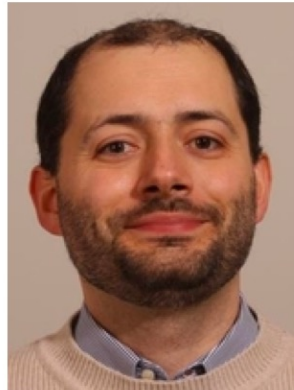
- The ATLAS Early Career Scientist Board (ECSB) was created in 2017 [[mandate](#)]
- Goal: maximally **integrate and support** early career scientists within ATLAS
- Early Career Scientist (ECS): all students and anyone within 10 years of PhD completion
- Activities:
  - Follow up with ATLAS management and collaboration board on ECS-related issues
  - Carry out surveys to collect feedback from the collaboration
  - Organize events to support ECSs



Ben  
Davis-Purcell



Flavia  
de Almeida Dias



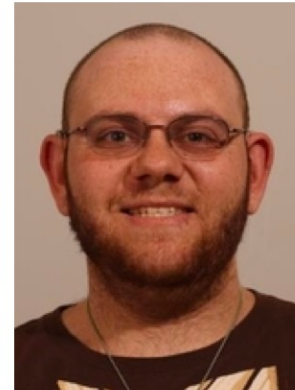
Michele  
Faucci Giannelli



Sébastien  
Rettie



Sukanya  
Sinha



Giordon  
Stark



Emily  
Thompson



## Latest Events

### Induction Day and “A year in ATLAS”

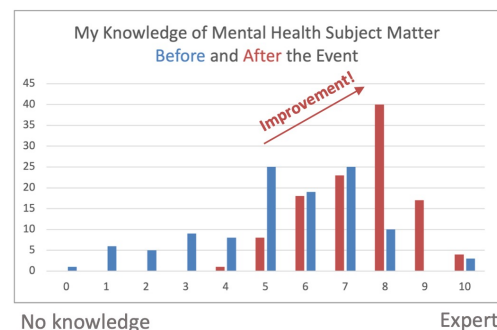
- **Induction Day** is for the newest ATLAS members
- Participants get their questions answered by collaboration leaders, learn how to be new to ATLAS and how to do an ATLAS analysis
- Next Induction Day (+ software tutorial) taking place October 29<sup>th</sup>, registration is [now open!](#)
- **“A year in ATLAS”** is a similar event, but aimed at those who have finished their qualification task. Next iteration will be held early next year.
- Please **advertise these events to newcomers** in your group!



## Latest Events

### Introduction to Mental Health

- Held in May 2021, [event](#) introduced mental health concepts and how to deal with them
- Workshop run by [Sarah Speziali](#) (therapist and life coach, with connections to CERN)
- Check out [resources](#) and [slides](#)
- Over 250 participants, with 98% interested in another event on this topic



## Latest Events

### A Conversation Over Ice Cream

- Annual event initiated by ECSB and hosted with early career fora from CMS, ALICE, and LHCb with the objective of broadening the knowledge horizon of young scientists
- Latest iteration devoted to [machine learning in high energy physics](#)
- No ice cream this time, hopefully next time!



### Machine learning in high energy physics

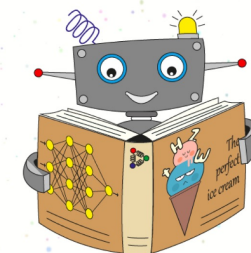
a Conversation over Ice Cream

Introduction to machine learning in HEP

- Gregor Kasieczka (CMS)

Graph neural networks

- Nikita Kazeev (LHCb)



Generative models and where to find them in HE

- Michael Kagan (ATLAS)

BDT, shallow and deep neural network technique

- Gian Innocenti (ALICE)

5 October 2021, 16:00 CEST

<https://indico.cern.ch/event/1074354/>



## Latest Events

### Meet & Eat

- Have lunch with another member of the ATLAS collaboration
- Senior+junior members are paired randomly, they arrange a time to meet virtually for coffee/lunch/chat
- We usually have a dedicated group of ~60 people who regularly participate, please join us!
- Taking place during the weeks of November 22<sup>nd</sup> to December 10<sup>th</sup>
- Registrations are now open **until November 14<sup>th</sup>**, please [sign up!](#)









# Who is U.S. ATLAS?

- There are ~44 U.S. Institutes that are members of U.S. ATLAS
  - roughly 3/4 are funded by the Department of Energy (DOE)
  - roughly 1/4 are funded by the National Science Foundation (NSF)
- In terms of distributions of people
  - ~580 “Scientific” personnel
  - ~100 “Technical” personnel
  - ~75 “Computing” personnel
  - ~20 “Administrative” personnel





# US ATLAS Committees

- We have a number of groups that keep us running:
  - Speakers Committee
  - Nominations Committee
  - Well-Being Committee
  - Equity, Diversity and Inclusion Committee
  - Public Education and Engagement Committee
- There is, after all, more than physics to doing physics!

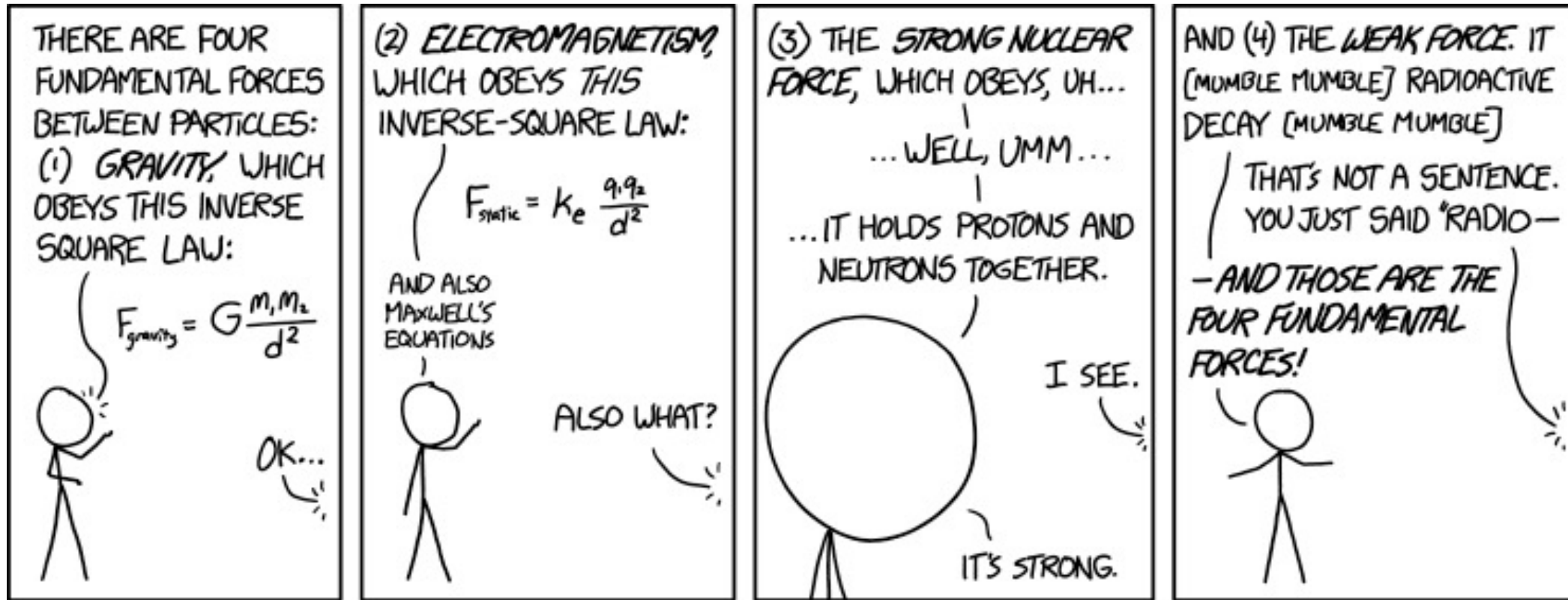


# U.S. ATLAS EDI Plan

- We have developed an EDI plan
  - It includes the U.S. ATLAS EDI Committee, but extends far beyond the committee
- Goals Include:
  - **Equity:** Ensure fair access to opportunities and advancement to all members of U.S. ATLAS
  - **Diversity:** Ensure that U.S. ATLAS management reflects the diversity of our collaboration across categories that include gender, geographic location and type of institution
  - **Inclusion:** Improve the climate in support of retaining a diverse group of U.S. ATLAS Collaborators
  - **Diversity in HEP:** Build diversity in our field by reaching out to the broader and diverse society, educating the public, and encouraging students of all demographics to pursue and maintain interest in the scientific disciplines
  - **Metrics:** Achieve a 70% participation rate of U.S. ATLAS members answering our request for demographic information



# Thanks for your attention!



xkcd comics : Fundamental Forces